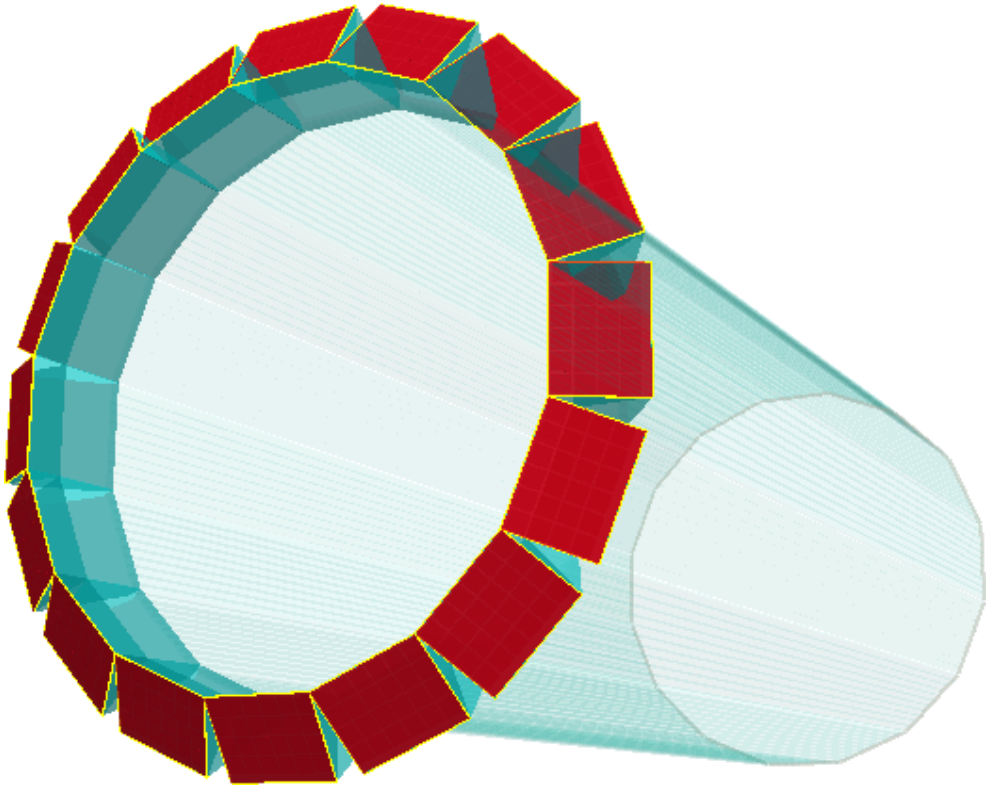
DIRC@EIC

Greg Kalicy



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3-layer lens tests

- Focal Plane Mapping
- Irradiation Test
- Performance in test beam

DIRC@EIC simulation

- Time-based reconstruction
- Cylindrical 3-layer lens

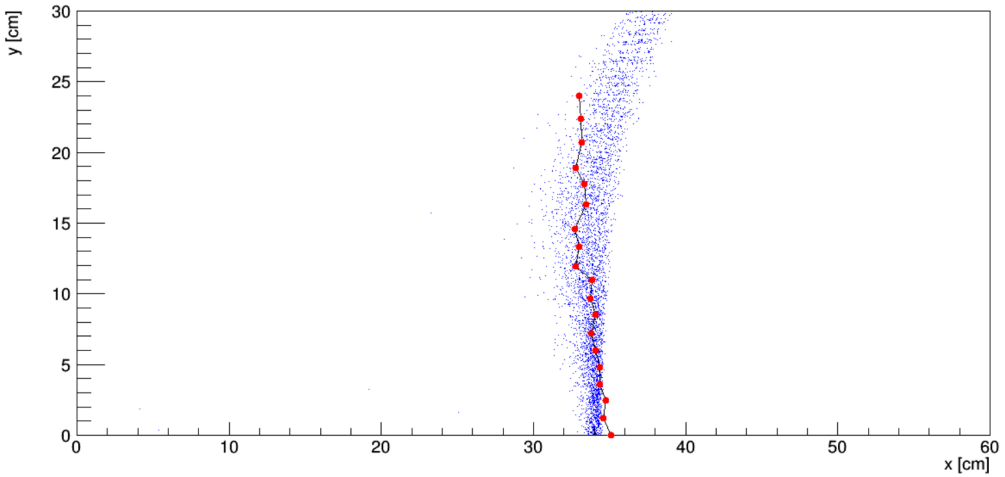
Next prototype of the 3-layer lens

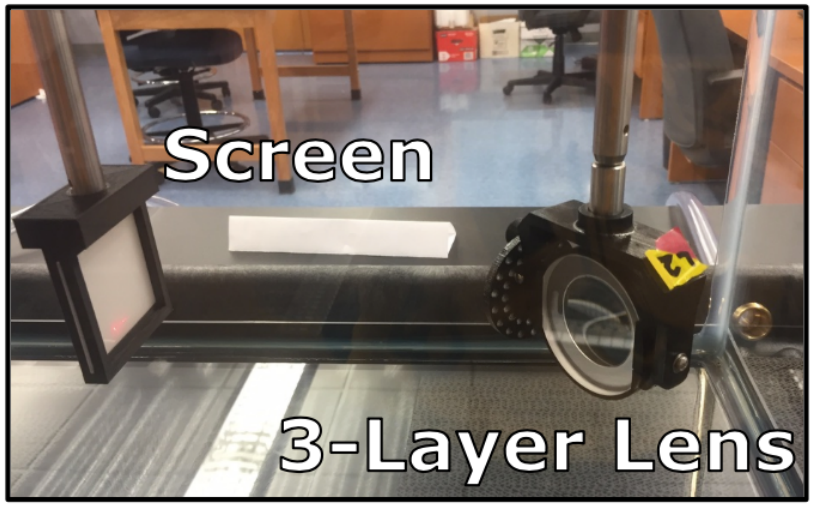
- Building optimized cylindrical 3-lens design to reach better performance with wide-plate geometry
- Identifying alternative material to NLaK33

3-layer lens Mapping focal plane

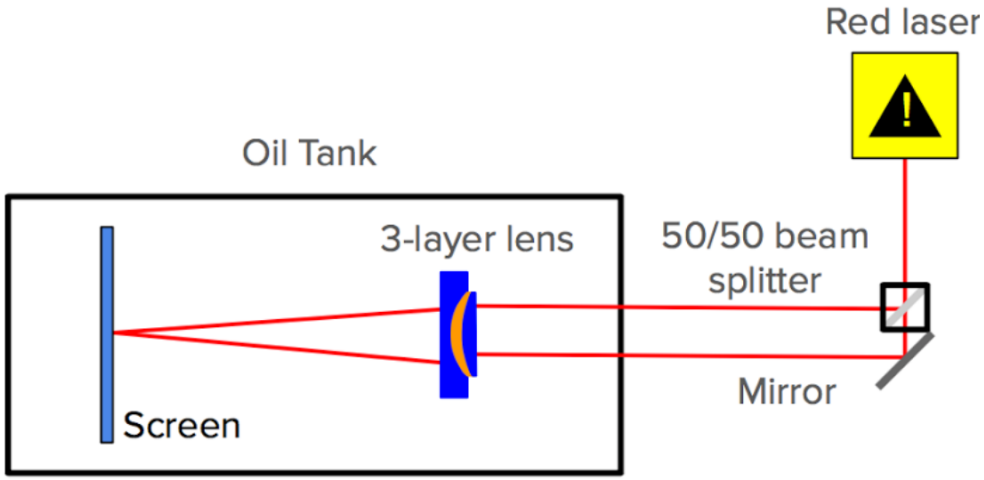
3-layer lens Mapping focal plane

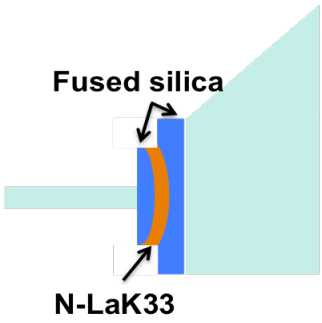
Measured and simulated focal plane
3-layer lens



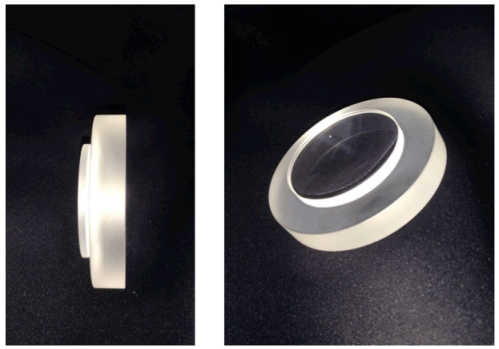


Laser setup to map the focal plane

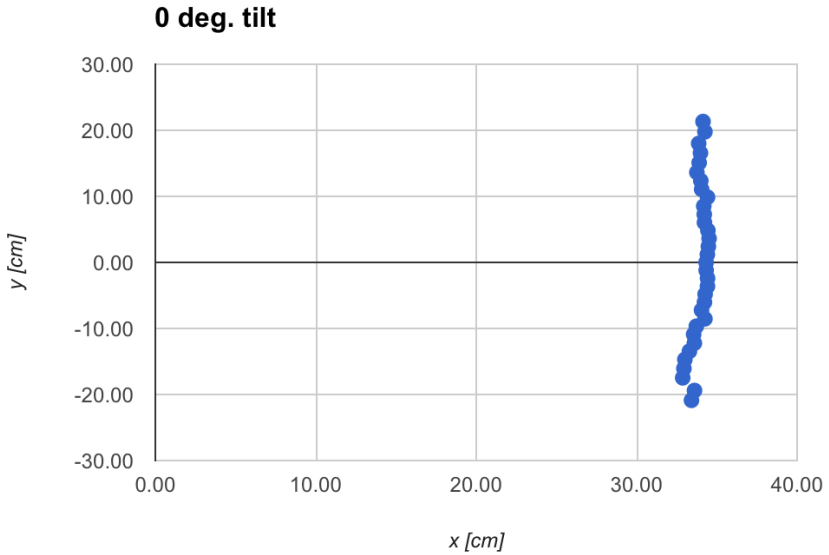


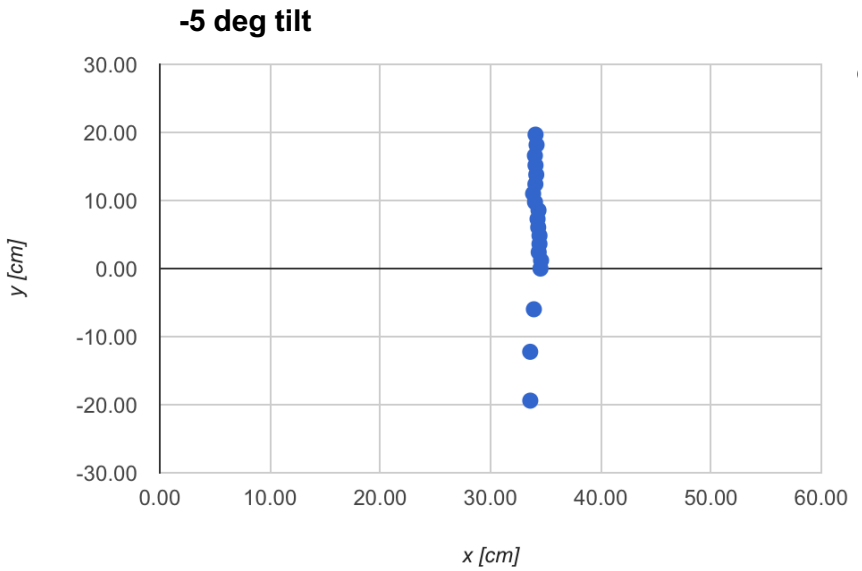


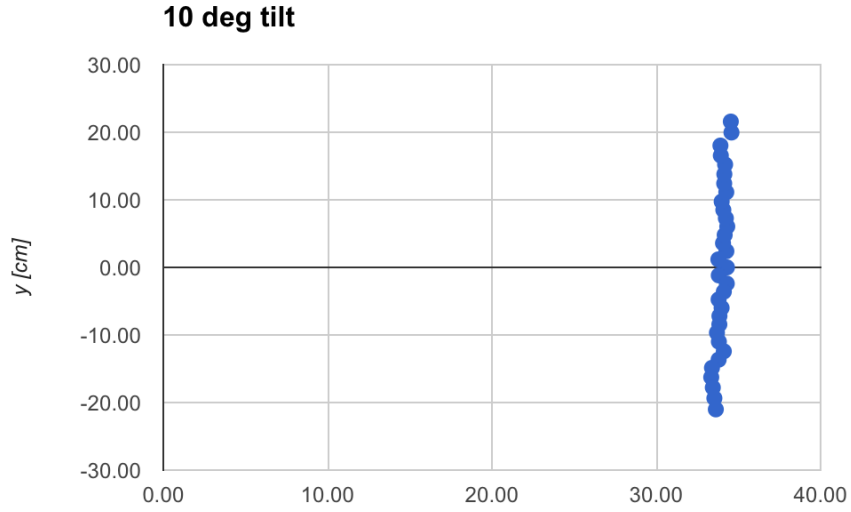
3-layer lens

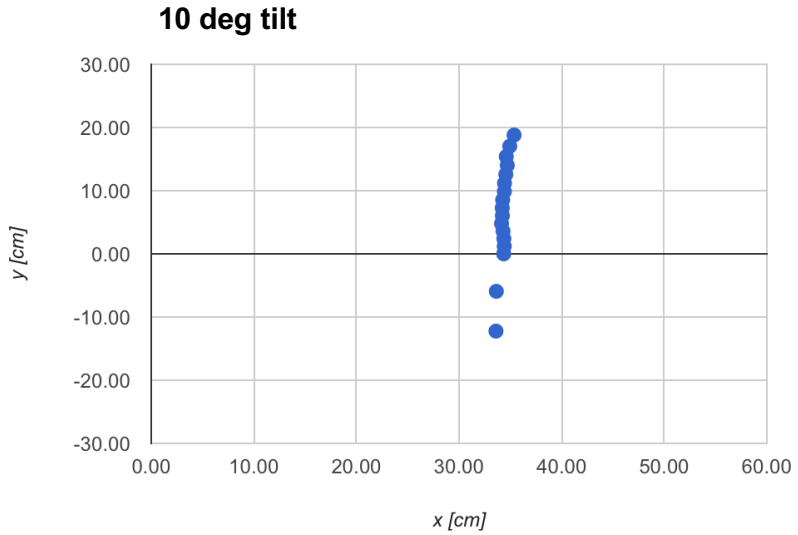


3-layer lens Mapping focal plane



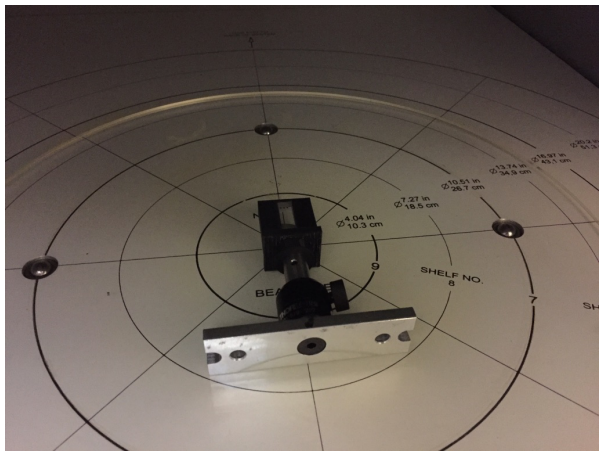




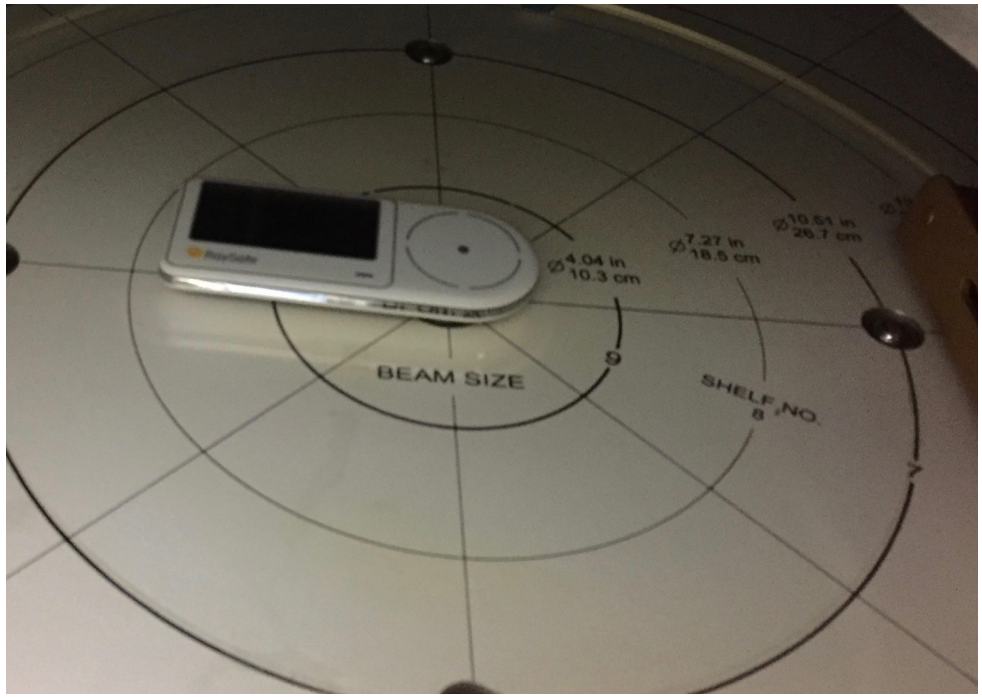


DIRC@EIC Radiation Hardness Test

NlaK sample



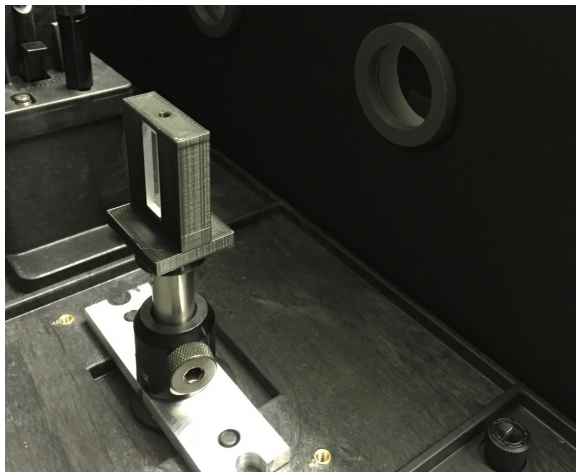
Calibration



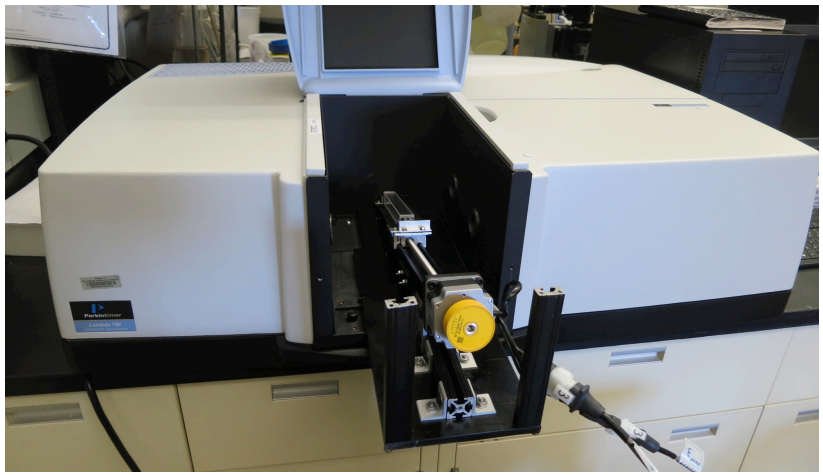
X-ray source

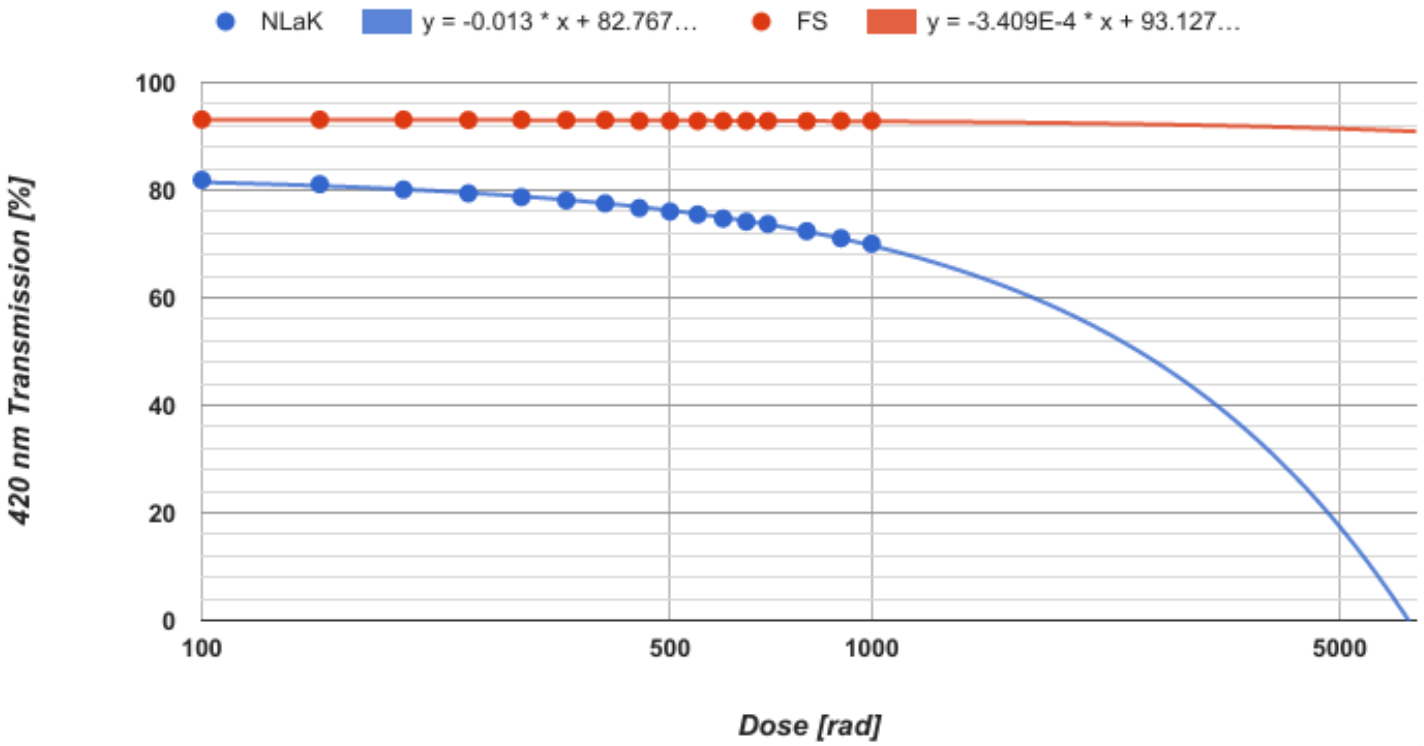
DIRC@EIC Radiation Hardness Test

NlaK sample



Monochromator





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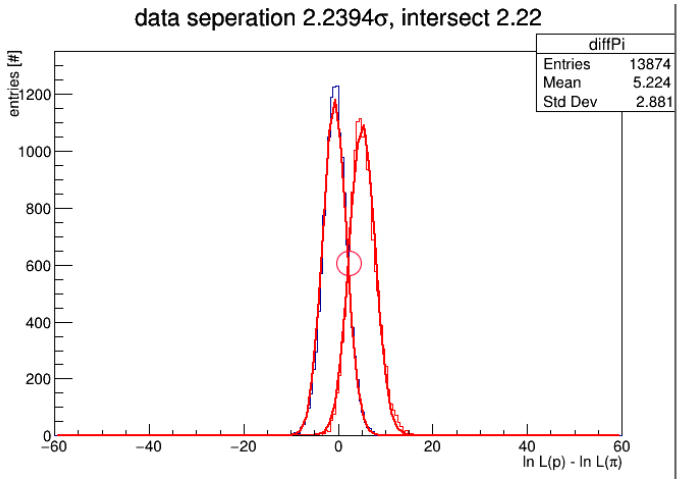
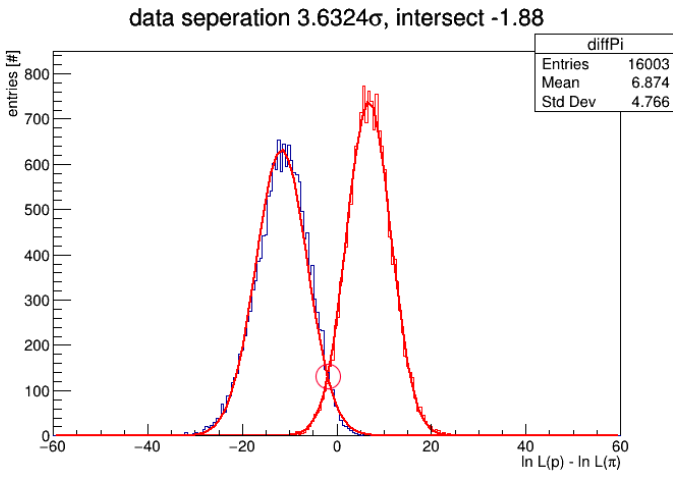
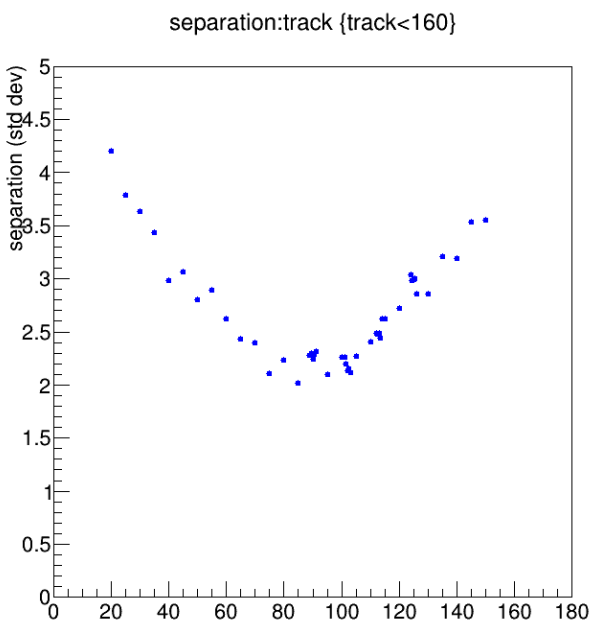
DIRC@EIC Time based Reconstruction

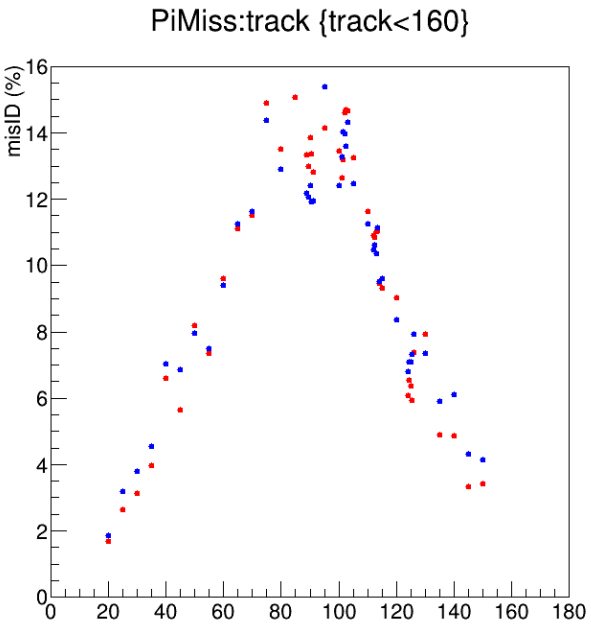
90deg

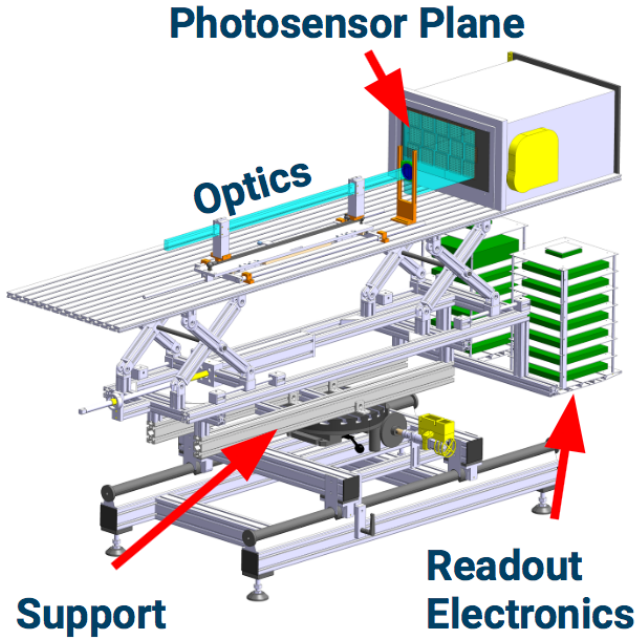


25deg



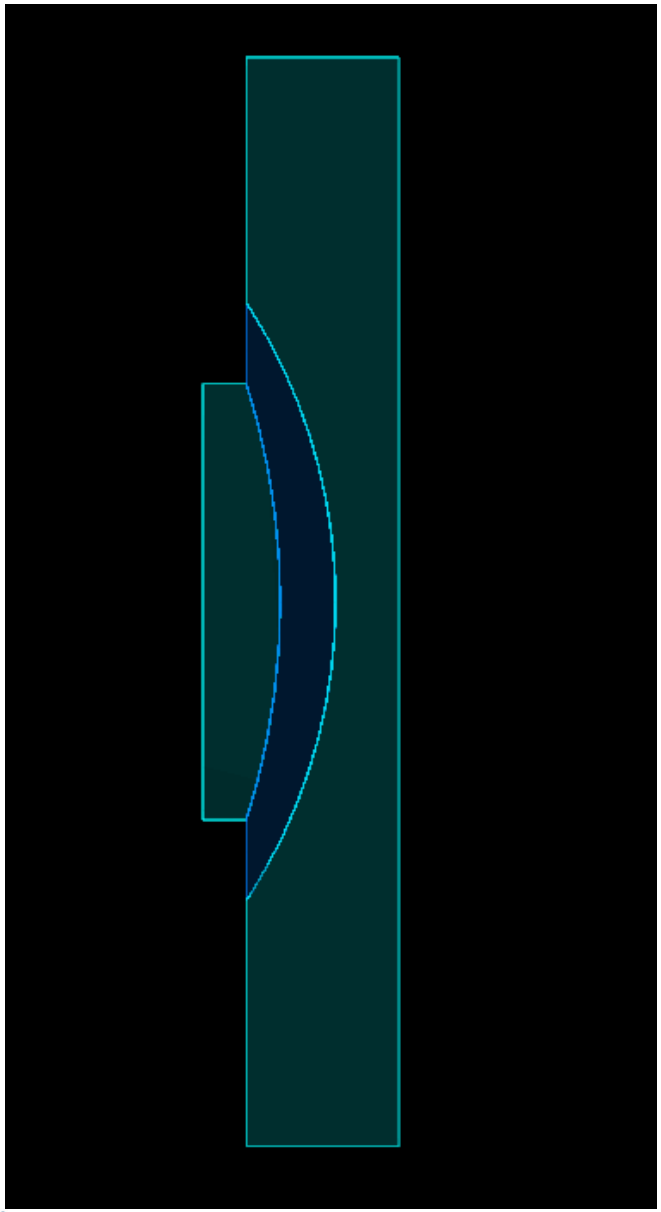


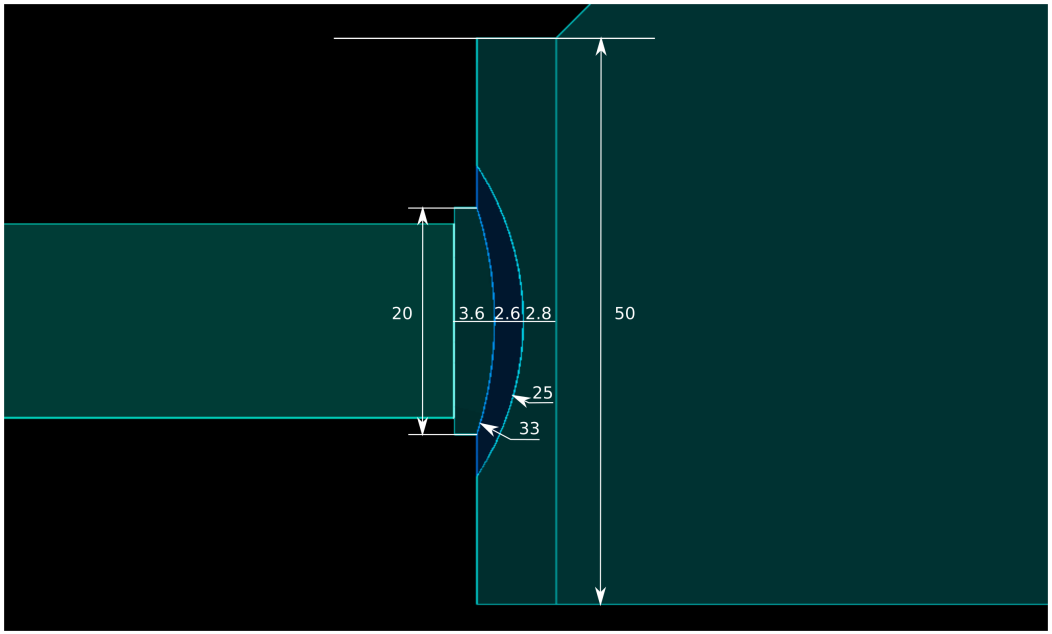


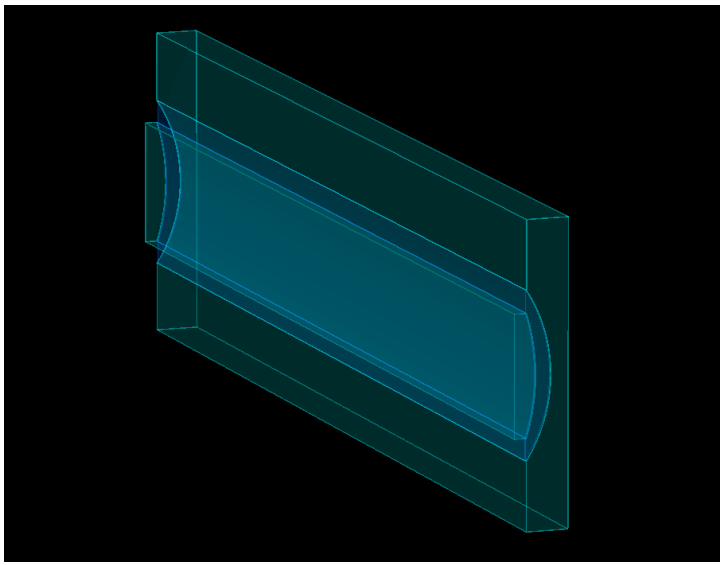


New 3-layer Lens Simulated cylindrical lens

Cylindrical 3-layer lens with N-LaK middle layer

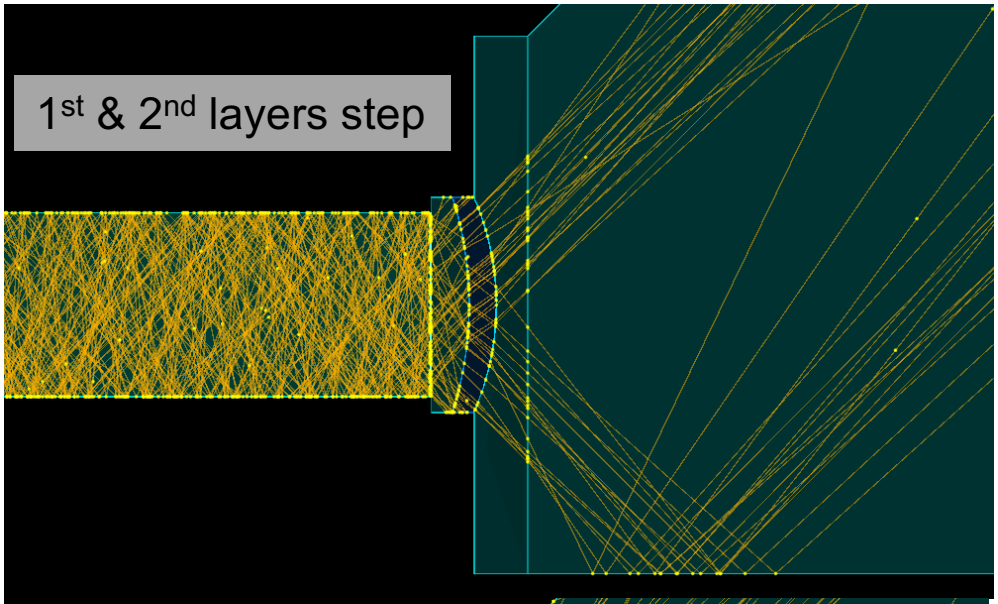


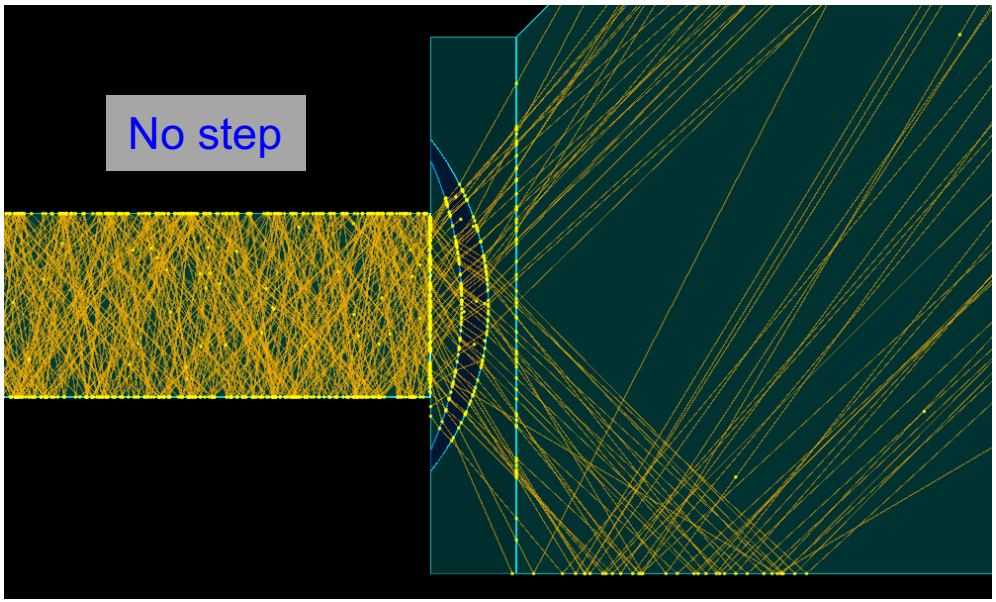


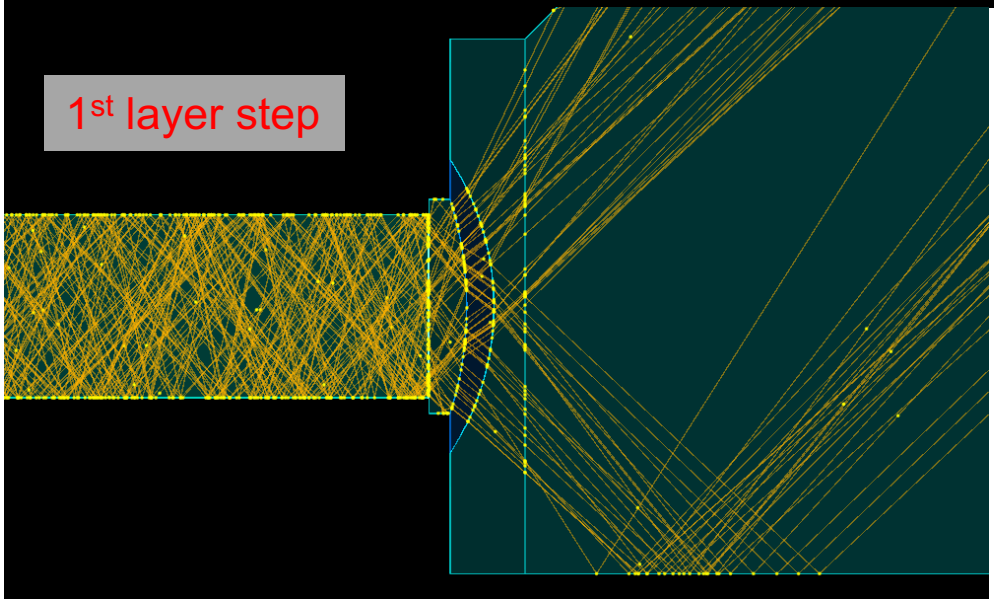


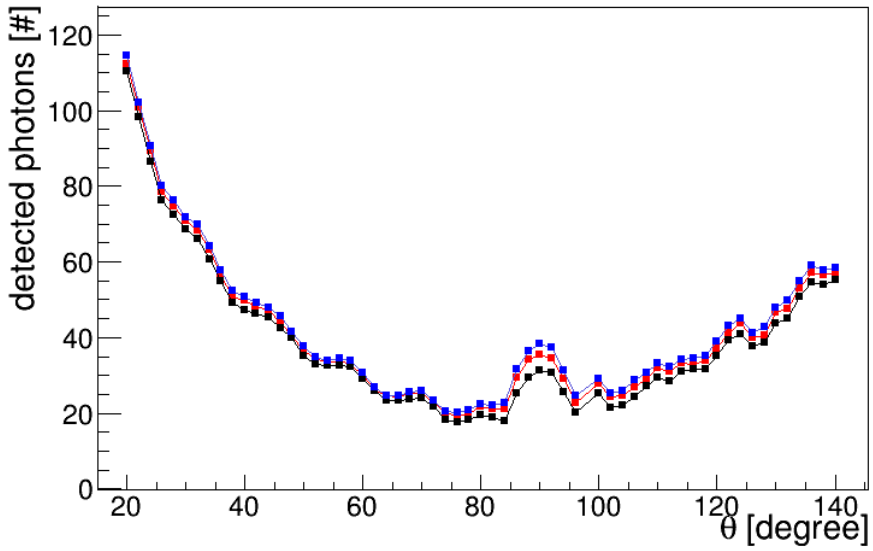
New 3-layer Lens Simulated cylindrical lens

Cylindrical 3-layer lens with N-LaK middle layer (optimizing design)









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3-layer lens tests

- Focal Plane Mapping (**3D mapping done, consisted with simulation**, **x,y shifts coming soon**)
- Irradiation Test (**First results irradiation of NLaK sample using X-Rays**, **further tests with same sample and different thickness samples, irradiation with different source**)
- Performance in test beam (**performance using geometrical reconstruction done, time based reconstruction being developed on 2015 CERN data first**, **further development and cross-check of 2016 data on the way**)

DIRC@EIC simulation

- Time-based reconstruction (**will try to apply on EIC simulation soon**)
- Cylindrical 3-layer lens **(optimized design of N-LaK based lens to achieve best performance in case of per photon resolution (SPR) and photon yield)**

Next prototype of the 3-layer lens

- Building optimized cylindrical 3-lens design to reach better performance with wide-plate geometry (**previous vendor has risky time estimate, very advanced negotiations with two US vendors, might need to make some small changes to design**)
- Identifying alternative material to NLaK33 (**in progress, news very soon**)